DOCKET NO.: HITACHI-0018 PATENT

Serial No.: 09/994,951

Page -2-

Amdt. dated July 6, 2004

Response to Office Action of April 8, 2004

Amendments to the Specification:

Please replace the paragraph starting with "Still referring to FIGURE 1" beginning on page 7, lines 4-23, with the following amended paragraph:

Still referring to FIGURE 1, each of the above processing units processes information in a predetermined sequence and manner. According to a predetermined rule such as in an ifthen format, the characteristic rule generation processing unit 103 extracts certain characteristic information to generate the characteristic rules 104 based upon the customer data 101, which includes at least one record each of which contains at least record entries. After the characteristic rules 104 are generated by the characteristic rule generation processing unit 103, the segment selection unit 106 determines the structure of the multi-dimensional database based upon the data definition information 102. The condition items in the data definition information 102 correspond to the key dimensions in the multi-dimensional database while the conclusion items correspond to the analysis dimensions. After the dimensional structure is determined, the characteristic rule generation processing unit 103 loads the customer data 101 and generates the multi-dimensional database. In other words, the above segment selection process includes two types of tasks. One task is to generate multidimensional database using the condition items as columns and rows, and the conclusion items as analysis results. The other task is to output the selected customer list with the selected segment data in tointo the above created multidimensional cells. A user is now involved to select one of the condition items in the characteristic rules 104. In response to the above user selection, a display screen is generated to display cell values as the conclusion items in the columns and rows which specify the condition items.

DOCKET NO.: HITACHI-0018

Serial No.: 09/994,951

Page -3-

Amdt. dated July 6, 2004

Response to Office Action of April 8, 2004

Please replace the paragraph starting with "Now referring to FIGURE 7" beginning on page 11, lines 18-31, and ending on page 12, lines 1-14 with the following amended paragraph:

Now referring to FIGURE 7, a flow chart illustrates steps involved in a preferred processes of the speculation model generation/selection according to the current invention. The steps are described with respect to the units and the data as shown in FIGURE 1. In a step 701, a portion of the customer data 101 is selected according to the data definition information 102. In the step 701, the selected portion is further refined to extract records that satisfy the conditions as set forth in the selected segments 108. In a step 702, the extracted records in the step 701 are divided into model candidate data and validating data. For example, the division is accomplished by randomly sampling sixty percent of the records as the model candidate data while the remaining forty percent as the validation data. After the division in the step 702, the conditions as defined in the data definition information 102 are comprehensively combined to generate in combination with the conclusion items in a step 703. For example, the above generated combinations of the conditions include a) gender & age; b) gender & profit amount and c) gender & age & profit amount. Based upon the above combined conditions as inputs and the conclusion items of the data definition information 102 as outputs, speculation models are generated in the step 703. In a step 704, it is determined whether or not each of the above generated speculation models in the step703 has been already verified in a verification step 706. If it is determined in the step 704, the model has not been already validated, a model candidate selection process is performed in a step 705. In the model candidate selection step 705, an unverified model is selected for verification. In the verification step 706, only data corresponding to the items in the model selected in the step 705 is extracted from the model candidate data from the division step 702. Based upon the above extracted data, the memory based reasoning (MBR) model is constructed in the step 706. Finally, for each of the records in the validation data that has been generated in the division step 702, speculation is performed in the verification step 706. On the other hand, if it is determined in the step 704 that the model has been already validated, the preferred process proceeds to a step 707 where a model selection takes place. Based upon the mean square error comparison, the speculation model with the least

3

DOCKET NO.: HITACHI-0018 PATENT

Serial No.: 09/994,951

Page -4-

Amdt. dated July 6, 2004

Response to Office Action of April 8, 2004

mean square error value is selected in the model selection step 707, and the preferred process terminates in a step 708.

Please replace the paragraph starting with "Now referring to FIGURE 9" beginning on page 12, lines 30-32, and ending on page 13, lines 1-14 with the following amended paragraph:

Now referring to FIGURE 9, exemplary results of the selected speculation model 110 are illustrated in a diagram. The used data is data that is used for speculation while the used speculation items are items that are used as condition items and conclusion items for speculation. The segment condition is a set of conditions that are to be satisfied by the records for the speculation model. In the above example, March data from the customer data 101 is used for speculation. In the same example, the condition items include occupation, profit amount and residence while the conclusion items include cancelled customers. The segment conditions include that age = 20 ~24, gender = female and profit amount = \$300~\$400.

Please replace the paragraph starting with "Now referring to FIGURE 10" beginning on page 13, lines 8-28, with the following amended paragraph:

Now referring to FIGURE 10, one example of the speculation results 112 is illustrated in a diagram. The exemplary speculation results 112 generally include a speculation value for a cancelled customer ID number and selection conditions such as segment conditions for a speculation model. The segment condition values from the segment model 110 are substituted in the selection conditions. It is optional to include other customer characteristics such as age and profit amount from the selected customer list. For example, a second row is a record for the customer ID = 00036 and its customer cancellation probability is 100% or 1.0. The same customer has become a part of the selected data for speculation since she met the following conditions that age is between 20 and 24, gender is female and the profit amount is between \$300 and \$400. In fact, the customer is a twenty-one year-old female who generated a profit amount of \$320. As described above, the selection condition column is one of the patentable features of the current invention. Based upon the above selection conditions or reasons for selecting a particular customer for speculation, the user determines a course of action for the particular

4

DOCKET NO.: HITACHI-0018 PATENT

Serial No.: 09/994,951

Page -5-

Amdt. dated July 6, 2004

Response to Office Action of April 8, 2004

customer. In an alternative embodiment, instead of executing the speculation process 111 after each of the selected segment process 106, more than one segment is selected at a time, and the speculation process 111 speculates to generate the results collectively based upon the above plurality of the selected segments.

Please replace the paragraph starting with "Now referring to FIGURE 11" beginning on page 13, lines 27-32, and ending on page 14, lines 1-12 with the following amended paragraph:

Now referring to FIGURE 11, one example of the collective speculation processes is illustrated in a flow diagram. The selected customer list 107 includes all the customers that are included in any one of a plurality of the selected segments. Although not shown in FIGURE 11, the rule generation items in the data definition information 102 are all included. A speculation model selection process or unit 1101 selects one record at a time from the selected customer list 107 and also selects one speculation model from a speculation model set 1102 for each of the above selected record. The speculation model set 1102 is a collection of more than one speculation model 110 that has been generated in advance based upon the selection segment 108. The speculation model selection process or unit 1101 determines whether or not the selected record meets the segment conditions of each of the speculation models in the speculation model set 1102. The speculation model selection process or unit 1101 inputs any one of the speculation models that meet the segment conditions into a speculation process or unit 111. The speculation process or unit 111 outputs the speculation results 112. The format of the speculation results 112 is illustrated in FIGURE 10, and the selection conditions may vary for each record. In one preferred embodiment, the above described steps or flows are associated with a single command from a user rather than separate commands as shown in the function menu items as shown in FIGURE 6.

5